

WHAT IS CLAIMED IS:

1. A method of modulating the immune system of an animal by affecting the physiology of an antigen-presenting cell in said animal, comprising contacting said antigen-presenting cell with an effective amount of at least one retinoid and an effective amount of at least one cytokine, under conditions whereby the physiology of said antigen-presenting cell is affected.
2. The method of claim 1, wherein the effect upon said antigen-presenting cell is activation of said cell.
3. The method of claim 1, wherein the effect upon said antigen-presenting cell is inhibition, delaying, or prevention of apoptosis in said cell.
4. The method of claim 2, wherein said retinoid is selected from the group consisting of a pan-RXR agonist and an RAR antagonist.
5. The method of claim 4, wherein said pan-RXR agonist is selected from the group consisting of SR11237, Compound V, and pharmaceutically acceptable salts, esters and prodrugs thereof.
6. The method of claim 4, wherein said RAR antagonist is selected from the group consisting of Compound II, Compound V, Compound VIII, and pharmaceutically acceptable salts, esters and prodrugs thereof.
7. The method of claim 3, wherein said retinoid is an RAR agonist.
8. The method of claim 7, wherein said RAR agonist is an RAR $\alpha$  agonist.

9. The method of claim 8, wherein said  $\text{RAR}\alpha$  agonist is Compound I or a pharmaceutically acceptable salt, ester or prodrug thereof.

10. The method of claim 1, wherein said cytokine is selected from the group consisting of  $\text{TNF}\alpha$ ,  $\text{IL1-}\beta$ , and active fragments, variants, analogues and derivatives thereof.

11. A method of inducing apoptosis in a mammalian antigen-presenting cell, comprising contacting said cell with an effective amount of at least one synthetic retinoid under conditions whereby said antigen-presenting cell is induced to undergo apoptosis.

12. The method of claim 11, wherein said synthetic retinoid is selected from the group consisting of an  $\text{RAR}\alpha$  agonist, an  $\text{RAR}\beta$  agonist, and a pan-RXR agonist.

13. The method of claim 12, wherein said  $\text{RAR}\alpha$  agonist is Compound I or a pharmaceutically acceptable salt, ester or prodrug thereof.

14. The method of claim 12, wherein said  $\text{RAR}\beta$  agonist is selected from the group consisting of Compound III, Compound VII, and pharmaceutically acceptable salts, esters and prodrugs thereof.

15. The method of claim 12, wherein said pan-RXR agonist is selected from the group consisting of SR11237, Compound V, and pharmaceutically acceptable salts, esters and prodrugs thereof.

16. The method of claim 1 or claim 11, wherein said antigen-presenting cell is a dendritic cell or a Langerhans cell.

17. A composition for use in modulating the immune system of an animal comprising at least one retinoid and at least one cytokine, each being present in said composition in an amount effective to modulate the immune system of said animal.

18. The composition of claim 17, wherein said modulation is accomplished by activating an antigen-presenting cell in said animal.

19. The composition of claim 17, wherein said modulation is accomplished by inhibiting, delaying or preventing the apoptosis of an antigen-presenting cell in said animal.

20. The composition of claim 18, wherein said retinoid is selected from the group consisting of a pan-RXR agonist and an RAR antagonist.

21. The composition of claim 20, wherein said pan-RXR agonist is selected from the group consisting of SR11237, Compound V, and pharmaceutically acceptable salts, esters and prodrugs thereof.

22. The composition of claim 20, wherein said RAR antagonist is selected from the group consisting of Compound II, Compound V, Compound VIII, and pharmaceutically acceptable salts, esters and prodrugs thereof.

23. The composition of claim 19, wherein said retinoid is an RAR agonist.

24. The composition of claim 23, wherein said RAR agonist is an RAR $\alpha$  agonist.

25. The composition of claim 24, wherein said RAR $\alpha$  agonist is Compound I or a pharmaceutically acceptable salt, ester or prodrug thereof.

26. The composition of claim 17, wherein said cytokine is selected from the group consisting of TNF $\alpha$ , IL1- $\beta$ , and active fragments, variants, analogues and derivatives thereof.

27. The composition of claim 17, further comprising one or more antigens.

28. The composition of claim 27, wherein said one or more antigens are selected from the group consisting of one or more bacterial antigens, one or more fungal antigens, one or more viral antigens, one or more animal antigens, one or more tumor cell antigens, one or more plant antigens, and combinations thereof.

29. The composition of claim 17 or claim 27, further comprising one or more pharmaceutically acceptable carriers or excipients.

30. A composition for use in inducing apoptosis in a mammalian antigen-presenting cell, comprising a pharmaceutically acceptable carrier and at least one synthetic retinoid selected from the group consisting of an RAR $\alpha$  agonist, an RAR $\beta$  agonist, and a pan-RXR agonist.

31. The composition of claim 30, wherein said RAR $\alpha$  agonist is Compound I or a pharmaceutically acceptable salt, ester or prodrug thereof.

32. The composition of claim 30, wherein said RAR $\beta$  agonist is selected from the group consisting of Compound III, Compound VII, and pharmaceutically acceptable salts, esters and prodrugs thereof.

33. The composition of claim 30, wherein said pan-RXR agonist is selected from the group consisting of SR11237, Compound V, and pharmaceutically acceptable salts, esters and prodrugs thereof.

34. The composition of any one of claims 17, 27 and 30, wherein said antigen-presenting cell is a dendritic cell or a Langerhans cell.

35. A method for treating or preventing a physical disorder in an animal, comprising administering to an animal suffering from, or predisposed or susceptible to, said physical disorder an effective amount of the composition of any one of claims 17, 27 and 30.

36. The method of claim 35, wherein said physical disorder is selected from the group consisting of an infectious disease, a parasitic disease, an immune system dysfunction and a cancer.

37. The method of claim 35, wherein said animal is a human.